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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/529,425	09/16/2005	Gerhard Lammel	10191/4133	4531

26646 7590 06/10/2009

KENYON & KENYON LLP
ONE BROADWAY
NEW YORK, NY 10004

EXAMINER	
ALANKO, ANITA KAREN	
ART UNIT	PAPER NUMBER
1792	
MAIL DATE	DELIVERY MODE
06/10/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/529,425	LAMMEL ET AL.	
	Examiner	Art Unit	
	Anita K. Alanko	1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 March 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *10,12-16 and 19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *10,12-16 and 19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *4/22/09*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Drawings

The drawings were received on 3/9/09. These drawings are acceptable.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 10, 12-16, 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 10, it is unclear how the "wherein" clause manipulatively affects the method steps. It is unclear when exactly the functional layer is created. Is a functional layer created when it is first blanket deposited, or when it is patterned/etched into functional "form" (or pattern) for the final product.

In claims 10 and 15, the term "exposing" the functional layer is a broad term, and thus fails to further limit the method steps. Merely formed the functional layer creates an upper surface that is exposed, as broadly interpreted. How does "exposing" use a sacrificial layer? Is the sacrificial layer removed? The claims could cite that the functional layer is released.

Claims 12-14, 16 and 19 fail to cure the indefiniteness of their base claim, and are therefore also rejected.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 10, 12 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Sakata et al (JP 06-324074 A).

Sakata disclose a method for producing a micromechanical component (see title) using a sacrificial layer (the porous silicon layer 16A) comprising:

creating a patterned porous region 16A in a silicon substrate 1 (Fig.2c, paragraph [0046] of translation);

creating a functional layer 12 above the porous region (12 will subsequently form beam 4, it is created above the porous region as shown in Fig.2c);

subsequently exposing the functional layer 12, 4 (beam, [0048]), the porous region being used at least partially as the sacrificial layer (by removing it to release the beam, Fig.2i);

wherein the porous region is created first, and then the functional layer is created (by being released).

As to claim 12, Sakata discloses to first dope11, and then to create the porous region 16A, 17A (see abstract).

As to claim 13, Sakata discloses to pattern the functional layer (to form beam 4) and to create additional layers 5, 8 (for piezo resistance and passivation, [0044]-[0045]) above the porous region.

Claims 10, 12 and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Benz et al (US 5,542,558).

Benz discloses a method for producing a micromechanical component (see abstract) using a sacrificial layer (the porous silicon layer 3) comprising:

creating a patterned porous region 3 in a silicon substrate 2 (Fig.1);

creating a functional layer 1 above the porous region (Fig.1);

subsequently exposing the function layer 6, the porous region being used (by removing it) as a sacrificial layer (Fig.3);

wherein the porous region is created first, and then the functional layer is created (by being released).

As to claim 12, Benz discloses to first dope (col.2, line 33), and then to create the porous region (col.2, lines 62-64).

As to claim 14, Benz discloses to dry etch the porous region (col.4, lines 7-13).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 13, 15, 16 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Benz et al (US 5,542,558).

The discussion of Benz from above is repeated here.

As to claims 13 and 19, Benz discloses to form released structures, but fails to disclose the final product. It would have been obvious to one with ordinary skill in the art to form further layers as cited in order to form a functional final product.

As to claims 15 and 19, Benz teaches to vary the doping in order to vary the amount of doping in order to have vertical and lateral control of structures (col.3, lines 43-46). It would have been obvious to have higher and lower regions of porosity as cited because Benz teaches that it is a useful technique to control the vertical and lateral formation of structures. It would have been further obvious to thermally treat and cover as cited in order to optimize the formation of the final structure with desired vertical and lateral structures, and further layers in the final product inherently cover to at least some extent.

As to claim 16, it would have been obvious to etch off a cover layer in order to enable the formation of the final product.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sakata et al (JP 06-324074 A) in view of Benz et al (US 5,542,558).

The discussion of Sakata from above is repeated here.

As to claim 14, Sakata fails to disclose dry etching. Benz teaches that instead of wet etching, that one may dry etch the porous region (col.4, lines 7-13). It would have been obvious to substitute dry etching for wet etching in the method of Sakata because Benz teaches that this is a useful technique for removing porous silicon, and is expected to give the predictable result of a removed porous silicon region.

Response to Amendment

The claims remain rejected under 35 USC 112 because they remain unclear. The claims remain rejected under Sakata et al and Benz.

Response to Arguments

Applicant's arguments filed 3/9/09 have been fully considered but they are not persuasive. Applicant argues that "created" is more clear than produced, and argues about the term "exposed." In response, the wherein clause creates confusion as to when exactly the creation takes places. Exposed is a broad term, and it appears that applicant is interpreting exposed more narrowly than a fair reading of the claim would suggest. Any layer without overlying layers is exposed to some extent. See the rejection.

As to the rejections over Sakata and Benz, applicant argues that the features are not disclosed. The arguments are not commensurate in scope with the claim language. Benz and Sakata disclose doping a region of a silicon substrate, rendering it porous, then removing the porous region to expose/release another functional layer. Further, Sakata varies the amount of porosity (16A, 17A), and Benz teaches the advantages of varying porosity to control lateral and vertical etching.

Applicant has submitted an IDS with another reference, with U.S. equivalent 5,594,171, which also reads the invention as claimed.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anita K. Alanko whose telephone number is 571-272-1458. The examiner can normally be reached on Mon-Fri until 3:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571-272-1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Anita K Alanko/
Primary Examiner, Art Unit 1792